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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,653	04/19/2001	Apostolos Kantzas	13202.00289	9103

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EXAMINER

CINTINS, IVARS C

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 06/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/837,653

Applicant(s)

Kantzas et al.

Examiner

Ivars Cintins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-29 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-15 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

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Claim 5 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, this claim has not been further treated on the merits.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Cairns et al (U.S. Patent No. 5,580,461). The reference discloses a system wherein a mixture of adsorbent material such as zeolite (col. 6, line 2) and photocatalytic material such as titanium oxide (col. 6, line 54) is subjected to ultraviolet radiation (col. 6, line 41) in a treatment zone having an inlet and an outlet; and this is all that is required by apparatus claims 1-4 and 7-10. Applicant should note that a recitation with respect to the manner in which a claimed apparatus is intended to be employed (i.e. downflow fixed bed treatment; and upflow fluidized bed regeneration) does not

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differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns et al. The reference discloses the claimed invention with the exception of the recited screen (claim 11) and controller (claims 12, 13 and 15), and the number of treatment devices employed (claim 14). However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Cairns et al. with a screen for the regeneration zone, in order to prevent unwanted escape of particulate material from this regeneration zone. Similarly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide this reference system with a conventional controller, in order to control the various operations in this system. Furthermore, it

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been obvious to one of ordinary skill in the art at the time the invention was made to employ a plurality of treatment device in the system of Cairns et al., in order to increase the treatment capacity of this reference system.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns et al. as applied above, and further in view of Hu et al. (U.S. Patent No. 5,385,753). Cairns et al. discloses the claimed invention with the exception of utilizing a composite adsorbent and photocatalytic material. Hu et al. discloses (see col. 1, lines 35-38) that it is known to employ titanium dioxide coated zeolite in photo-oxidation operations. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the titanium dioxide coated zeolite of the secondary reference for the zeolite and titanium oxide particles of Cairns et al., in order to facilitate handling of the treatment materials in this primary reference system.

Claims 16-29 are allowed.

Roberts (U.S. Patent No. 2,855,364) discloses a liquid purification process comprising downflow treatment and upflow regeneration. Johnston (U.S. Patent No. 5,130,031) discloses a photocatalytic decomposition system comprising a plurality of controllers.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to I. Cintins whose telephone number is (703) 308-3840. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.

The fax phone numbers for this art unit are: (703) 872-9311 for "Official" faxes after Final Rejection; (703) 872-9310 for all other "Official" faxes; and (703) 872-9492 for "Draft" and other "Unofficial" faxes.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Ivars C. Cintins
Ivars C. Cintins
Primary Examiner
Art Unit 1724

I. Cintins
June 21, 2002